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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/271,447	03/18/1999	HIROAKI SATOH	400113/SAHIN	4160

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EXAMINER

CLEVELAND, MICHAEL B

ART UNIT	PAPER NUMBER
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1762

DATE MAILED: 05/30/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/271,447

Applicant(s)

SATO, HIROAKI

Examiner

Michael Cleveland

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 March 2003.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 20-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 20-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 20-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nojiri '111 in view of Taylor '148, and further in view of Tanaka et al. (U.S. Patent 5,858,616).

'111 teaches a process for forming a pattern of fluorescent substance into the cell of a fluorescent substance display substrate comprising providing in the cell two separate layers which are i) a resin composition layer (A, 7) and ii) a photosensitive (see col. 7, lines 1-10) composition layer (B, 8) (Fig. 4a-4b), exposing the layers to light, developing the layers, and baking the developed layers (col. 4, lines 18-39), wherein the resin composition (A) layer comprises an acrylic polymer (a, col. 10, lines 28-67) having a weight average molecular weight preferably in the range of 20,000-150,000 (col. 11, lines 26-36) and an acid number of 90-260 mgKOH/g (col. 11, lines 37-50), an ethylenically unsaturated compound (b, col. 11, line 63-col. 14, line 19) and a fluorescent substance (phosphor d, col. 16, lines 11-29) and the resin composition layer (7) is disposed between the inside of the cell (formed by substrate 1 and walls 2) and the photosensitive resin composition layer (8), as shown in Fig. 4B. The photosensitive composition may also contain a polymerization inhibitor (col. 23, lines 11-16).

'11 teaches that the resin composition layer also includes (c) a photoinitiator in order to aid in the photopolymerization. Thus, '111 does not explicitly teach the use of a layer consisting essentially of (a) the acrylic polymer, (b) the ethylenically unsaturated group, (d) the phosphor, and the polymerization inhibitor.

'148 teaches that acrylic polymers (col. 3, lines 29-68) may be photopolymerized either with the addition of ethylenically unsaturated compounds and without the addition of photoinitiators (col. 7, lines 49-68). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have eliminated the photoinitiator from the

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photopolymerizable composition of '111 in order to have saved material costs or as a matter of convenience (e.g., if the materials were not available) with a reasonable expectation of success because '148 teaches that the components are not required for the photopolymerization of acrylic monomers.

Nojiri '111 and Taylor '148 are described above. '111 teaches that the viscosity of the photosensitive resin (A) should be $1-10^9$ Pa.s (col. 24, lines 27-34), but is silent as to the glass transition temperature. Thus, it does not teach a glass transition temperature of less than 30°C or not less than 30°C .

'616 teaches that the similar photosensitive phosphor-containing resins for application by laminating (see Fig. 3) It teaches identical viscosity ranges for the resin (col. 13, lines 31-40) to those of '111, and further teaches a preferred range of 1 to 500 Pa.s (i.e., 1000-500000 mPa.s). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used polymers or other components, such as plasticizers, with similar viscosities to the desired viscosity in order to have reduced the need for viscosity adjusting additives. Such viscosity is controlled via the glass transition temperature of the acrylic polymer ('616, col. 13, lines 17-29). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have optimized the glass transition temperature in order to have achieved the desired viscosity.

3. Claims 20-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka '616 in view of Taylor '148 and Koike et al. (U.S. Patent 5,922,395, hereafter '395).

Claims 1, 8, and 19: '616 teaches depositing a layer that is both an resin (A) composition layer (See col. 4, lines 36-45) and a photosensitive resin (B) composition layer (See col. 2, lines 26-62.) The resin composition includes (a) an acrylic resin is a copolymer with an acid value of 15-200 and a weight average molecular weight of 10,000-150,000 (col. 6, lines 46-59), (b) a phosphor (i.e., a fluorescent material) (col. 2, lines 26-34), and (c) an ethylenically unsaturated compound (col. 2, lines 53-61). The composition may contain a polymerization inhibitor (col. 13, lines 20-26). The composition is deposited in cells of a plasma display (col. 14, line 46-col.

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15, line 7), exposed (col. 15, lines 8-50), developed (col. 15, lines 51-67), and baked (col. 16, lines 41-48; col. 17, lines 10-13).

The resin composition layer also includes an ethylenically unsaturated monomer and a photoinitiator in order to aid in the photopolymerization (col. 2, lines 53-61). Thus, '111 does not explicitly teach the use of a layer consisting essentially of (a) the acrylic polymer, (b) the phosphor, (c) the ethylenically unsaturated compound, and (d) the polymerization inhibitor.

'148 teaches that acrylic polymers (col. 3, lines 29-68) may be photopolymerized either with the addition of ethylenically unsaturated compounds and without the addition of photoinitiators (col. 7, lines 49-68). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have eliminated the photoinitiator from the photopolymerizable composition of '111 in order to have saved material costs or as a matter of convenience (e.g., if the materials were not available) with a reasonable expectation of success because '148 teaches that the components are not required for the photopolymerization of acrylic monomers.

'616 and '148 do not teach the formation of separate layers, wherein a photosensitive layer (B) is formed after a resin composition layer (A) is formed.

Koike '935 teaches two equivalent embodiments of forming pigment layers for applications such as plasma display panels (col. 1, lines 7-9). In one (Figs. 1-2), a photosensitive pigment composition is deposited in the cells of the display panel, exposed and developed (col. 7, lines 8-29). In the other, a pigment composition layer (7) and a photoresist (i.e., a photosensitive resin) layer are applied. The photoresist layer is exposed, and both layers are developed (col. 8, line 42-col. 9, line 38).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have applied a photoresist layer, such as that of Koike '395's second embodiment, on top of the phosphor layer of Tanaka '616 before developing and exposure with the expectation of similar results because Koike '395 teaches the equivalence of depositing a photosensitive pigment layer, and depositing a pigment layer followed by a photoresist layer before development in the formation of plasma display panels.

The following comments refer to the teachings of '616:

Claims 20-22: The viscosity of the polymer composition is 1 to 500 Pa.s (i.e., 1000-500000 mPa.s). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used polymers with similar viscosities to the desired viscosity in order to have reduced the need for viscosity adjusting additives. Such viscosity is controlled via the glass transition temperature of the acrylic polymer (col. 13, lines 17-29). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have optimized the glass transition temperature in order to have achieved the desired viscosity.

Response to Arguments

4. Applicant's arguments filed 3/19/2003 have been fully considered but they are not persuasive.

Applicant argues that Nojiri '111 and Tanaka '616 require the use of a photoinitiator. Applicant argues that the disclosure of Taylor '148 that photopolymerization of the polymers of '111 and '616 may occur without a photoinitiator does not remedy the deficiency because the references contradict. The Examiner disagrees. The primary references use a photoinitiator, but contain no suggestion that the invention will fail without the photoinitiator. Taylor, on the other hand, offers the reasonable expectation of success of photopolymerizing the same polymers as '111 and '616 even without the use of a photoinitiator.

Applicant's arguments regarding the superiority of the claimed invention by using a photoinhibitor are unconvincing because they are unsubstantiated by evidence. Further, there is no assertion that any such superiority is unexpected. Applicant refers to the prior declaration. However, the experiments in the declaration do not use polymerization inhibitors.

Conclusion

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after

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the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Cleveland whose telephone number is (703) 308-2331. The examiner can normally be reached on 9-5:30 M-F.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shrive Beck can be reached on (703) 308-2333. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 306-3186 for regular communications and (703) 306-3186 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

MBC

MBC

May 26, 2003


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SUPERVISORY PATENT EXAMINER
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